SLEEPY HOLLOW STEELHEAD REARING FACILITY

SEDIMENT CONTROL AND INTAKE RETROFIT

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

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INTRODUCTION

This report is an update of a prior report dated 14 February 2003. The 2003 report evaluated eight alternate methods to improve the water intake at the Rearing Facility. This report shall focus on Alternate 8.

FINDINGS

Alternate 8 – Buried Concrete Settling Pit Overview:

1. River water inlet: System flowrate will increase from 900 GPM (2 CFS) to 1350 GPM (3 CFS). Replace the fish screen and piping, to support the increased flowrate and conform to the river bottom features. Connect to the (e) pump housing. Provide three 12" dia concrete 'dolphins' upstream of fish screen to protect against floating debris. Screen to be self-cleaning.
2. Retain (e) pump housing as a point of connection between the new water intake device and the settling pits. Replace (e) cover with a new, lightweight cover.
3. Extend a 16" dia pipe from the housing to the clarifier with a shut-of valve.
4. Construct a buried, precast concrete clarifier in the south river bank. This review is based on using a single, 8' high x 8' wide by 100' long concrete chamber. Placement of clarifier will need to coordinate with an (e) 6" water pipe and a pair of 4" conduits. 6" water pipe can be removed, electrical conduits are to remain.
5. Provide manhole extensions from the top of the clarifier to above the storm high water level, 8' on center to provide access to the clarifier interior for cleaning. Provide removable grate covers. Comment regarding silt removal: consider using a local contractor to vacuum clean clarifier. Silt goes into a collection tank and could then be dumped where chosen. Vacuum truck would need access to the site and to be within 90' of the most remote manhole. Cleaning won't be 'perfect', but avoids sending personnel into the clarifier.
6. Consider using excavated materials to construct a protective berm on the upstream side of the clarifier.
7. Provide a 'catwalk' from the service road to the end manhole. Final design shall consider use of a 'suspended bridge' and a more conventional 'catwalk'. High water damage to any new construction and access to the manholes being the major concerns.

8. Pumps. Provide a pump room at the end of the buried clarifiers and select two, 100% capacity (3 CFS), open type pumps. Construct a pump housing to draw river water from clarifiers, complete with inlet piping, valves, discharge piping, and sump pump. Some of the secondary (cold well) pumps may remain usable with the addition of new pumps for the increased flowrate.
9. Piping: Replace (e) piping to and from the cooling tower for increased flow and added cooling tower cell. Replace instrumentation as needed to match increased pipe sizes.
10. Provide a second Lakos separator for the increased flowrate, before the cooling towers.
11. Add a cooling tower cell to cool the increased water flow rate and keep the wet bulb approach as low as possible.
12. Add a side-stream sand filter in the cooling tower basins to aid in cleaning the cooling tower sumps.
13. Provide an Arkal filter after the cold well tank to clean water prior to it entering the rearing channel.
14. Provide for increased electrical loads due to accommodate increased pump and cooling tower horsepower.

Possible Construction Cost:

Revisions at the (e) water intake (dolphins, fish screen, piping):		$60,000
Piping to clarifier:	$7,000	
Clarifier with pump pit, catwalk:		$240,000
Primary pumps, secondary pumps:		$120,000
Piping to new cooling tower:		$12,000
New cooling tower:	$160,000	
Piping to cold well:		$12,000
Piping from cold well to rearing channel and holding tanks:		$12,000
Control upgrades:	$40,000	
Concrete pads:	$20,000	
Electrical upgrades[1, 2]:	$120,000	
Contingency[3]:	$160,000	
General Contractor[4]:	$160,000	
Construction Total:	$1,120,000	
Owner soft costs[5]:	$280,000	
Project Total:	$1,400,000	

Notes:
1. Presumes PG&E service is adequate.

2. Presumes no new emergency generator or transfer switch.
3. Contingency at 20% at this level.
4. GC mark-up, bonds, insurance at 20%.
5. Design, project management, permitting, etc at 25%.

CONCLUSIONS:

The river sand will be removed in the clarifier. Some silt fines will be removed in the Lakos separator. Fines captured in the cooling tower will be removed by the Arkal filters.

An outside Contractor can vacuum clean the clarifier as required by the river loading. Fines entrained in the Lakos and Arkal backwash will continue to be placed in the adjacent floodway channel.

Alternate 8 is buildable, relies on low-tech solutions and materials and minimizes construction work in the river. The buried clarifier provides protection from high river water levels. Improved maintenance and protection for the pumps is the provided. Minimum permit review is required.